Remarks

The Applicants have added new Claims 14 – 21. New independent Claim 14 is similar to Claim 3 except that it recites that Ni is present in an amount of 0.2 to about 2.0% and V is present in an amount of about 0.05% to about 0.3%. Independent Claim 20 is similar to Claim 4 except that it recites the above-mentioned amounts of Ni and V. Support for the Ni and V quantities in Claims 14 and 20 may be found in paragraphs [31] and [33] of the Applicants' Specification.

New Claim 15 depends from Claim 3 and recites that the steel sheet has a ridging height of about 50 μm or less. Support may be found in original Claim 2. New Claim 16 depends from Claim 3 and recites that the steel sheet has an r-value of 1.5 or more. Support may be found in original Claim 7. Claim 17 is similar to Claim 16 except that it depends from Claim 4. Claims 18 and 19 are similar to Claims 15 and 16, respectively, except that they depend from Claim 14. Finally, Claim 21 is similar to Claim 16 except that it depends from Claim 20. Entry into the Official File and consideration on the merits is respectfully requested.

The Applicants acknowledge the rejection of Claims 3 and 4 under 35 U.S.C. §103 over the hypothetical combination of Imai with EP '206, EP '084, Kato, EP '375 or Sato. The Applicants respectfully submit that the hypothetical combination fails to teach or suggest the subject matter of either of Claims 3 and 4 for the reasons set forth in detail below.

The Applicants first agree that the cited prior art does not teach lubricating steel surfaces with a coating comprising an acrylic resin, calcium stearate and a polyethylene wax as recited in Claims 3 and 4. Using this as the starting point, the Applicants note that the lubricant that is disclosed by Imai is nowhere taught or suggested to be applied specifically to a ferritic stainless steel sheet as claimed. In the Applicants' Claims 3 and 4, the lubricant coat is applied to a cold-rolled stainless steel sheet that has a smooth surface. In sharp contrast, Imai discloses a lubricating coating for use in cold

plastic working of metal materials such as iron or steel, copper or copper alloy, aluminum or aluminum alloy, titanium or titanium alloy. However, there is no teaching or suggestion to apply the Imai lubricant coat to a stainless steel sheet as claimed herein. The inventive Examples of Imai verify this fact by application of the Imai lubricant coating to SPC steel sheets (cold-rolled steel sheets). Thus, there is no evidence that the coating of Imai is actually applicable to the claimed ferritic stainless steel sheet or the ferritic stainless steel sheets of the primary references, to the extent that they disclose ferritic stainless steel sheets.

The Applicants also respectfully submit that the disclosure of Imai is extremely broad with respect to the components of the Imai lubricant and the coating amount. Therefore, the Applicants respectfully submit that it would be anything but a "matter of choice and routine optimization" to realize the Applicants' coating that has specific components and a specific coating amount. While the Applicants fully agree that Imai discloses each of an acrylic resin, a polyethylene wax and calcium stearate, those individual components are merely examples of a far broader disclosure from which one of ordinary skill in the art would have to choose to realize the claimed components. For example, Imai discloses that one component is a synthetic resin. This encompasses an extremely broad number of possible components, just a few examples of which include polyvinyl alcohols, polyvinyl pyrrolidones, acrylic resins, vinyl acetate resins, epoxy resins, urethane resins and phenolic resins. On this basis alone, one of ordinary skill in the art would have to choose from a large variety of possibilities and would have to do a huge amount of experimentation to conclude that there is any possible advantage to the use of acrylic resins in particular.

Then, Imai discloses the possible use of metal soaps, of which there are any possible number of examples. Moreover, Imai does not even disclose metal soaps as a required component. In fact,

metal soaps are merely lumped together with a broad category of optional waxes, polytetrafluoroethylene, oils and various mixtures.

Essentially the same thing can be said for waxes, inasmuch as waxes are broadly inclusive of many types of compounds, only one of which is a polyethylene wax. Again, as in the case of the metal soaps, there is nothing in Imai that teaches or suggests that waxes in general, much less polyethylene waxes, are particularly important since they are optional in Imai.

Thus, the Applicants respectfully submit that one of ordinary skill in the art, when viewing Imai, would face a vast pool of possible components from which to choose and would further face a vast amount of experimentation among that vast pool to realize that there would or could be any advantage to the claimed acrylic combination of the acrylic resin, calcium stearate and polyethylene wax. This is also borne out by the large number of Examples provided by Imai. In particular, there is not one combination that includes all of the claimed acrylic, calcium stearate and polyethylene wax. In particular, reference to Tables 2 and 3 in Columns 13 to 17 of Imai shows that there are no inventive Examples containing calcium stearate and polyethylene wax. For example, the most relevant Examples of Imai include Examples 10, 25, 26, 27 and 28, wherein the base resin is acrylic resin. However, calcium stearate is not added to any one of Examples 25, 26, 27 and 28. Similarly, polyethylene wax is not present in Example 10.

Thus, the Specification of Imai teaches a wide variety of potential components from which one of ordinary skill in the art would have to choose and then experiment with. The Examples, as helpfully illustrated in the Tables of Imai, show that there is utterly no guidance to one of ordinary skill in the art that would lead such a person to utilizing the combination of acrylic resin, calcium stearate and polyethylene wax. In fact, the many Examples of Imai would lead one of ordinary skill in the art to use other combinations. Thus, it could be said that Imai, in their Examples, actually

leads one of ordinary skill in the art away from the Applicants' claimed combination of acrylic resin, calcium stearate and polyethylene wax. This is, of course, the case because there is no better teaching to one of ordinary skill in the art than to provide Examples that actually have been shown to work. It is not a matter of theory when looking to the Examples, but actual concrete guidance to those of ordinary skill in the art as to which possible combinations of lubricants work.

There is another important difference of Claims 3 and 4 over Imai. In particular, the Applicants specifically claim the coating amount of about 0.5 g/m^2 to about 4.0 g/m^2. Again, the Applicants note that, upon first blush, Imai discloses a broad coating amount which ranges from 1 g/m^2 to 30 g/m^2. However, a closer examination of the total Imai disclosure reveals that Imai leads those of ordinary skill in the art to a range that is really greater than 8 g/m^2. First, Imai overtly states this in Column 10 at line 40 by stating that the most preferred range is 8 to 15 g/m^2. Again, referring to the Examples, which are the best indicator of what those of ordinary skill in the art will be taught from looking to Imai, is that the coating weights of the Imai Examples are within the most preferred range taught by Imai and, in any event, far exceed the claimed uppermost limit of 4.0 g/m^2. Thus, the Applicants respectfully submit that, if one of ordinary skill in the art looks to Imai, the ordinary practitioner will be led away from the Applicants' uppermost claimed range of 4.0 g/m^2. In fact, the Applicants respectfully submit that one of ordinary skill in the art would be led to the conclusion that the amount of the coating should be twice as large as the claimed coating amount. This means that Imai actually would be leading one of ordinary skill in the art away from the claimed amount, which can be as low as 15 times smaller than the smallest amount actually suggested by Imai.

When all aspects of the Applicants' Claims 3 and 4 are taken together with respect to the specifically claimed combination of acrylic resin, calcium stearate and polyethylene wax in a coating amount of about 0.5 g/m^2 to about 4.0 g/m^2, it can be hardly be said that Imai would lead one of

ordinary skill in the art to that particular combination. While the individual pieces of the Applicants' claimed combination may be present in Imai, when Imai is fairly taken for what it teaches and suggests to one of ordinary skill in the art, it is clear that one of ordinary skill in the art would be led away from the Applicants' combination. There is not a single Example in Imai that includes all three components. In fact, there is nothing in Imai that suggests that any of the acrylic wax, calcium stearate or polyethylene wax provide particular advantage over any of the other possible components.

Also, the true teachings of Imai with respect to the coating weight lead one of ordinary skill in the art away from the claimed range and not by a small amount, but in an amount that is twice the amount of the claimed amount. Thus, the Applicants respectfully submit that Imai would not provide teachings or suggestions that would lead one of ordinary skill in the art to apply a coating of acrylic resin, calcium stearate and polyethylene wax in amount of about 0.5 g/m^2 to about 4.0 g/m^2 to any of the ferritic stainless steel sheets of the primary references.

Moreover, the Applicants invite the Examiner's attention to Table 5 of the Applicants' Specification, wherein the Applicants demonstrated that the claimed range of 0.5 to 4.0 is, in fact, important. First, by looking on the low end of the range, namely the about 0.5 end of the range, it can be seen that the dynamic friction coefficient changes rather dramatically when moving from 0.5 g/m^2 to 0.4 g/m^2. The dynamic friction coefficient increases from 0.102 to 0.166. This is a sharp increase that continues moving to 0.2 g/m^2 coating amount. However, this sharp increase in dynamic friction coefficient is not seen when moving from 0.5 to 0.8 g/m^2. Thus, the Applicants have discovered a sharp dividing line between 0.5 and 0.4 g/m^2.

On the other hand, when looking at the upper end of the range, it can be seen that the weldability in the nugget diameter dramatically changes and is unacceptable with respect to its spot weldability at that point. Therefore, the Applicants respectfully submit that they have established, by

factual evidence, that the claimed range of about 0.5 to about 4.0 is important and provides surprising results. One of ordinary skill in the art would have had no reasonable expectation that a mere change in coating amount from about 0.5 to about 0.4 would dramatically change the dynamic friction coefficient. Similarly, one of ordinary skill in the art would have had no expectation that changing the coating amount from about 4.0% to about 4.2% would change the nugget diameter such that spot weldability would decrease dramatically. Thus, the Applicants respectfully submit that unexpected results have indeed been demonstrated by the Applicants that is above and beyond the failure of Imai to provide teachings or suggestions to those of ordinary skill in the art to employ the particular combination of an acrylic resin, a calcium stearate and polyethylene wax in a coating amount of about 0.5 g/m^2 to about 4.0 g/m^2. Withdrawal of the rejection is therefore respectfully requested.

In light of the foregoing, the Applicants respectfully submit that the entire Application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,

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